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Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT Date Submitted: January 18, 2005 (use as many sheets as necessary)		Complete if Known	
1 of 3		Application Number	10/687,186
		Filing Date	10/16/2003
		First Named Inventor	Sergey D. Lopatin
		Group Art Unit	2813
		Examiner Name	Thanh T. Nguyen
		Attorney Docket Number	039153-0484 (G1190)

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
TW	A1	2002/0137332	A1	Paranjpe et al.	09-26-2002	
	A2	2002/0109233	A1	Farrar	08-15-2002	
	A3	2002/0102838	A1	Paranjpe et al.	08-01-2002	
	A4	2002/0084529	A1	Dubin et al.	07-04-2002	
	A5	2002/0076925	A1	Marieb et al.	06-20-2002	
	A6	2002/0053741	A1	Iwasaki et al.	05-09-2002	
	A7	2002/0039542	A1	Bogel et al.	04-04-2002	
	A8	2002/0036309	A1	Sekiguchi et al.	03-28-2002	
	A9	2001/0035237	A1	Nagano et al.	11-01-2001	
	A10	6,706,626	B2	Huang	03-16-2004	
	A11	6,703,307	B2	Lopatin et al.	03-09-2004	
	A12	6,605,874	B2	Leu et al.	08-12-2003	
	A13	6,589,874	B2	Andricacos et al.	07-08-2003	
	A14	6,534,865	B1	Lopatin et al.	03-18-2003	
	A15	6,521,532	B1	Cunningham	02-18-2003	
	A16	6,500,749	B1	Liu et al.	12-31-2002	
	A17	6,482,740	B2	Soininen et al.	11-19-2002	
	A18	6,482,734	B1	Ha et al.	11-19-2002	
	A19	6,465,867	B1	Bernard et al.	10-15-2002	
	A20	6,461,675	B2	Paranjpe et al.	10-08-2002	
	A21	6,440,849	B1	Merchant et al.	08-27-2002	
	A22	6,426,289	B1	Farrar	07-30-2002	
	A23	6,423,633	B1	Tseng	07-23-2002	
	A24	6,423,289	B1	Klatte	07-23-2002	
	A25	6,420,262	B1	Farrar	07-16-2002	
	A26	6,410,383	B1	Ma	06-25-2002	
	A27	6,399,496	B1	Edelstein et al.	06-04-2002	
	A28	6,365,502	B1	Paranjpe et al.	04-02-2002	
	A29	6,344,413	B1	Zurcher et al.	02-05-2002	
	A30	6,297,146	B1	Lopatin	10-02-2001	
	A31	6,294,836	B1	Paranjpe et al.	09-25-2001	
	A32	6,294,463	B1	Tseng	09-25-2001	
	A33	6,268,291	B1	Andricacos et al.	07-31-2001	
	A34	6,242,808	B1	Shimizu et al.	06-05-2001	
	A35	6,225,221	B1	Ho et al.	05-01-2001	
	A36	6,180,522	B1	Hong	01-30-2001	
	A37	6,156,638		Agarwal et al.	12-05-2000	
	A38	6,130,156		Havemann et al.	10-10-2000	
	A39	6,117,770		Pramanick et al.	09-12-2000	
	A40	6,096,648		Lopatin et al.	08-01-2000	
TW	A41	6,090,710		Andricacos et al.	07-18-2000	

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Examiner Signature	<i>Tw</i>	Date Considered	4/14/05
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Sheet 2 of 3				Examiner Name	Thanh T. Nguyen
				Attorney Docket Number	039153-0484 (G1190)

U.S. PATENT DOCUMENTS					
		U.S. Patent Document			
TW	A42	6,090,701		Hasunuma et al.	07-18-2000
	A43	6,069,068		Rathore et al.	05-30-2000
	A44	6,037,001		Kaloyeros et al.	03-14-2000
	A45	6,030,895		Joshi et al.	02-29-2000
	A46	6,015,749		Liu et al.	01-18-2000
	A47	5,969,422		Ting et al.	10-19-1999
	A48	5,899,740		Kwon	05-04-1999
	A49	5,882,738		Blish II et al.	03-16-1999
	A50	5,821,168		Jain	10-13-1998
	A51	5,770,517		Gardner et al.	06-23-1998
	A52	5,654,245		Allen	08-05-1997
	A53	5,552,341		Lee	09-03-1996
	A54	5,300,462		Kakumu	04-05-1994
	A55	5,243,222		Harper et al.	09-07-1993
ITN	A56	5,224,520		Shinbara et al.	07-06-1993
	A57	5,004,520		Tsuji et al.	04-02-1991

FOREIGN PATENT DOCUMENTS								
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		Office ³	Number ⁴	Kind Code ⁵ (if known)				
TW	A58	EP	1 094 515	A2		04-25-2001		
	A59	EP	1 039 531	A2		09-27-2000		
	A60	EP	1 039 531	A3		12-20-2000		
	A61	EP	0 567 867	A2		11-03-1993		

NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.			T ⁶
TW	A62	4.7.3 General Reliability Issues Associated with IC Interconnects; Silicon Processing for the VLSI Era; Vol. II, pp. 264-265.			
TW	A63	James A. Cunningham, "Improving Copper Interconnects: A Search for Useful Dopants," Semiconductor International, (April, 2000), pp. 1-8.			

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TN	A64	Dong Joon Kim et al, "New Method to Prepare W-B ⁺ -N Ternary Barrier to Cu diffusion by Implanting BF ₂ ⁺ Ions Into W-N Thin Film," J. Vac. Sci. Technol. B 17(4), July/Aug, 1999, pp. 1598-1601.	
	A65	W. F. McArthur et al., "Structural and Electrical Characterization of Si-Implanted Tin as a Diffusion Barrier for Cu Metallization," Mat. Res. Soc. Symp. Proc. Vol. 391, 1995, pp. 327-332.	
	A66	PCT International Search Report, International Application No. PCT/US 02/32605, International Filing Date 11/10/2002 (7 pages).	
TN	A67	PCT International search Report, International Application No. PCT/US 02/32554, International Filing Date 11/10/2002 (5 pages).	

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